# CO² Analyzer PCE-CMM 10

## I. Introduction

CO2 is a naturally occurring gas that emitted at great levels by human activity and it is one of several greenhouse gases in our atmosphere. CO2 only accounts for 0.03% of the fresh air. If you breathe high concentration CO2, you may be at risk of carbon dioxide intoxication. Symptoms of carbon dioxide toxicity include headache, irregular heartbeat, nausea, unconsciousness, or even death.

PCE-CMM 10 is a CO2 meter that measures CO2 concentration, temperature and humidity. This meter is widely used in homes, shopping malls, offices, vehicles, stations etc.

***Please read carefully and follow all warnings and precautions before using the device.***
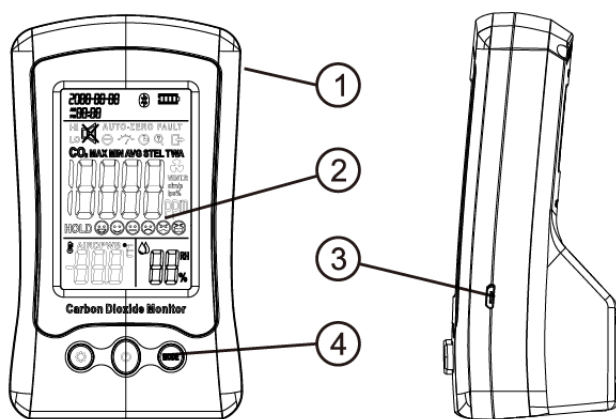
## II. Open box inspection

Open the box and take out the device. Please check whether the following items are deficient or damaged and contact your supplier immediately if they are.

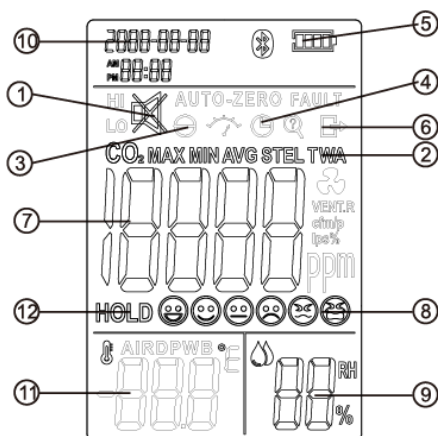| | |
|---|---|
| CO2 meter | 1 |
| Protective case | 1 |
| User manual | 1 |
| USB cable | 1 |

## III. Safety information

1. Check the device and its accessories for any damage or anomaly before use. Do not use the device if the cover is damaged, or has any other malfunctions.
2. Please follow the operation instructions.
3. Please do not open the device case and modify the internal circuit.
4. Do not store or use this device in high temperature, high humidity, flammable, explosive and strong electromagnetic environments.
5. Charge the meter when ⬚ symbol is displayed.
6. Regularly use soft cloth and mild detergent to clean the case. Do not use abradant or solvent.
7. Complies with CE standards.
8. This meter has ABC (Automatic Baseline Correction) function. Do not use this meter in closed environment where CO2 concentration remains relatively high.
9. Use specified adapter to charge the device. The adapter should comply with UL/FCC safety standards.

## IV. Structure



① Case
② LCD screen
③ USB port
④ Functional buttons

## V. Symbols



| No. | Indication |
| --- | --- |
| 1 | Audio alarm ON/OFF |
| 2 | STEL/TWA/MAX/MIN/AVG modes |
| 3 | CO2 calibration |
| 4 | Timing shutdown |
| 5 | Battery status |
| 6 | Exit calibration |
| 7 | CO2 concentration |
| 8 | CO2 concentration grading emoticon |
| 9 | Relative humidity |
| 10 | Date/time |
| 11 | Temperature |
| 12 | Data hold |

## VI. Operation instructions

### 1. Functional buttons

The following table shows the buttons functions in different modes.

| Modes | Functions | Buttons |
|---|---|---|
| OFF | Long press: turn **on/off** the meter | ⏻ |
| | Long press: enter calibration mode | ✿+⏻ |
| Measure | Short press: turn **on/off** the **backlight** | ⏻ |
| | Short press to switch **temperature unit ˚C/˚F** | ✿ |
| | Long press to turn on/off **audio alarm** | |
| | Short press: cycle switch between **HOLD/MAX/MIN/AVG/TWA/STEL** | **MODE** |
| | Long press: reset to zero | |
| | Long press: calibrate the CO2 concentration (outdoor fresh air) | ✿ +**MODE** |
| Calibration | Short press: increase the value | ⏻ |
| | Short press : next parameter (double press to enter **date/time** calibration) | ✿ |
| | Long press: save | |
| | Short press: decrease the value | **MODE** |
| | Short press: previous parameter | ✿ +**MODE** |
| | Long press: exit calibration | ✿+⏻ |

## 2. Operations

**CO2 measurement**

Long press ⏻ to turn on the meter. It takes 120s to stabilize CO2 concentration. CO2 concentration, ambient temperature, relative humidity will be displayed on the screen. CO2 concentration value is refreshed every 3 seconds.

**Note:** if CO2>1000ppm, buzzer goes off with red backlight flashing. The audio alarm's default setting is OFF, long press ✿ to turn on the audio alarm.

1) Concentration grading emoticons

| | |
|---|---|
| 😃 | 400ppm ~ 450ppm |
| 🙂 | 450ppm ~ 700ppm |
| 😐 | 700ppm ~ 1000ppm |
| 🙁 | 1000ppm ~ 2000ppm |
| 😖 | 2000ppm ~ 5000ppm |
| 😫 | >5000ppm |

**Data**

Short press **MODE** to cycle switch between HOLD/MAX/MIN/AVG/TWA/STEL values.

| Symbol | Indication |
|---|---|
| HOLD | Data hold |
| MAX | Maximum value |
| MIN | Minimum value |
| AVG | Average value |
| TWA | Time weighted average |
| STEL | Short-term exposure limit |

**TWA:** The average exposure within the workplace to any hazardous contaminant or agent using the baseline of an 8 hour day or 40 hours week work schedule.
**STEL:** The acceptable exposure limit to a toxic or irritant substance over a short period of time (time-weighted average), usually 15 minutes.

**Auto shutdown**

The meter will automatically shut down if there is no operation for 2 hours.

**Backlight**

Please refer to *Operation Instructions-Functional Buttons*

**Audio alarm**

Please refer to *Operation Instructions-Functional Buttons*

**Temperature unit**

Please refer to *Operation Instructions-Functional Buttons*

**Battery**

Charge the battery when ⎕ is displayed on the screen. It takes 2~3 hours to fully charge the battery.

**3. Calibration**

**Date/time**

Please refer to *Operation Instructions-Functional Buttons* to calibrate **date/time**.

**CO2**

*Note:* CO2 function has been calibrated before delivery. If the value is greatly deviated from the standard, you can calibrate it by either methods below:

**①  Automatic calibration**

*PCE-CMM 10 has the built-in self-correcting ABC (Automatic Baseline Correction) algorithm to automatically adjust the base value.*

1) Turn on the meter and leave PCE-CMM 10 at a place where there is flowing fresh air for 3 days (powered by the adaptor)

2) ABC function will automatically adjust and correct the CO2 standard value.

**Warnings**: ABC function is always on, do not use this meter in closed environment where CO2 concentration remains relatively high.

**②  Manual calibration**

1) Turn on the meter, leave it outdoor for 20 minutes

2) Long press **MODE+**⚙ until ⊖appears on the screen. Calibration takes 10 minutes.
   ⊖ symbol disappears when calibration is done.

**Note**: It is suggested to calibrate the meter in outdoor environments where there is air flow. Keep device away from animals, plants and human.

**VII. Specifications**

**1. Technical specifications**

| Function | Range | Resolution | Accuracy |
|----------|-------|------------|----------|
| CO2 | 400~5000 ppm | 1ppm | ±(5% of rdg+50ppm) from 400~2000ppm [1] |
| Temperature | -10.0˚C~50.0˚C | 0.1˚C | ±1˚C |
| Humidity | 0-99%RH | 1%RH | (10%RH～90%RH) ±5%RH @25˚C |

[1]Measure environment: 1atm, ambient temperature and humidity

[2]It may be influenced by heat emitted by the adaptor

**2. General specifications**

| Specifications | Descriptions |
|---|---|
| Sensor | NDIR principle |
| ABC | Automatic baseline correction |
| Audio alarm | Buzzer |
| Visual alarm | Red backlight |
| Display | LCD screen |
| Low battery indication | √ |
| Auto power off | √ |
| Backlight | √ |
| Operating environment | 0℃~50℃, 0%RH~85%RH |
| Storage environment | -20℃~60℃, 0%RH~95%RH |
| Power supply | Built-in 3.7V DC rechargeable battery |
| Weight | 195g |
| Dimension | 75mm x 55mm x 130mm |

**3. Adaptor**

| Output voltage | 5VDC |
|---|---|
| Output current | 1A |
| Safety standards | UL/FCC |

**VIII. Maintenance**

● **Maintenance**

1. The maintenance and service of the device must be implemented by qualified professionals or the designated departments.
2. Regularly use dry cloth to clean the case. Do not use detergent containing solvents.
3. To conserve battery, please turn off the device if not being used for a long time.

**IX. CO2 concentration and effects (only for reference)**

| Concentration | Effect |
|---|---|
| 350~450ppm | Fresh air |
| 350~1000ppm | Normal |
| 1000~2000ppm | Turbid air, sleepy |
| 2000~5000ppm | Headache, irregular heartbeat, nausea |
| >5000ppm | Unconsciousness or even death |